

CLAIMS

We claim:

1. An isolated polynucleotide molecule encoding a fibroblast growth factor (FGF) homolog polypeptide selected from the group consisting of:

a) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO: 1 from nucleotide 82 to nucleotide 621;

b) allelic variants of (a);

c) polynucleotide molecules that encode a polypeptide that is at least 60% identical to the amino acid sequence of SEQ ID NO: 2 from amino acid residue 28 (Glu) to amino acid residue 207 (Ala); and

d) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO: 6 from nucleotide 82 to nucleotide 621.

2. The isolated polynucleotide molecule of claim 1, wherein the polynucleotide molecule comprises a nucleotide sequence as shown in SEQ ID NO: 1 from nucleotide 1 to nucleotide 621 or a nucleotide sequence as shown in SEQ ID NO: 6 from nucleotide 1 to nucleotide 621.

3. The isolated polynucleotide molecule of claim 1, wherein the polynucleotide molecule comprises a nucleotide sequence as shown in SEQ ID NO: 1 from nucleotide 82 to nucleotide 621.

4. The isolated polynucleotide molecule of claim 1, wherein the polynucleotide is DNA.

5. An expression vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment selected from the group consisting of:

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a) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO: 1 from nucleotide 82 to nucleotide 621;

b) allelic variants of (a);

c) polynucleotide molecules that encode a polypeptide that is at least 60% identical to the amino acid sequence of SEQ ID NO: 2 from amino acid residue 28 (Glu) to amino acid residue 207 (Ala); and

d) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO: 6 from nucleotide 82 to nucleotide 621; and

a transcription terminator.

6. A cultured cell into which has been introduced an expression vector according to claim 5, wherein said cell expresses a polypeptide encoded by the DNA segment.

7. A method of producing an FGF homolog polypeptide comprising:

culturing a cell into which has been introduced an expression vector according to claim 5, whereby said cell expresses a FGF homolog polypeptide encoded by the DNA segment; and

recovering the FGF homolog polypeptide.

8. An isolated FGF homolog polypeptide selected from the group consisting of:

a) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO: 2 from residue 28 (Glu) to residue 175 (Met);

b) allelic variants of (a); and

c) polypeptide molecules that are at least 60% identical to SEQ ID NO: 2 from amino acid residue 28 (Glu) to amino acid residue 175 (Met).

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9. An isolated FGF homolog polypeptide selected from the group consisting of:

- a) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO: 2 from residue 28 (Glu) to residue 196 (Lys);
- b) allelic variants of (a); and
- c) polypeptide molecules that are at least 60% identical to SEQ ID NO: 2 from amino acid residue 28 (Glu) to amino acid residue 196 (Lys).

10. An isolated FGF homolog polypeptide selected from the group consisting of:

- a) polypeptide molecules comprising an amino acid sequence as shown in SEQ ID NO: 2 from residue 28 (Glu) to residue 207 (Ala);
- b) allelic variants of (a); and
- c) polypeptide molecules that are at least 60% identical to the amino acids of SEQ ID NO: 2 from amino acid residue 28 (Glu) to amino acid residue 207 (Ala).

11. The FGF homolog polypeptide of claim 8 further comprising a signal sequence.

12. The FGF homolog polypeptide of claim 8 further comprising a signal sequence as shown in SEQ ID NO: 2 from amino acid residue 1 (Met) to amino acid residue 27 (Ala).

13. A pharmaceutical composition comprising a purified FGF homolog polypeptide according to claim 8, in combination with a pharmaceutically acceptable vehicle.

14. An antibody that binds to an epitope of a polypeptide molecule comprising an amino acid sequence as shown in SEQ ID NO: 2 from residue 1 (Met) to residue 207 (Ala).

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15. The antibody of claim 14 that binds a polypeptide molecule comprising an amino acid sequence as shown in SEQ ID NO: 2 from residue 28 (Glu) to residue 196 (Lys).

16. A method of stimulating proliferation of myocytes or myocyte progenitors comprising administering to a mammal in need thereof, an amount of an FGF homolog polypeptide sufficient to produce a clinically significant increase in the number of myocytes or myocyte progenitors in said mammal.

17. The method of claim 16, wherein the myocytes or myocyte progenitors are cardiac myocytes or cardiac myocytes progenitors.

18. A method for ex vivo stimulation of myocyte progenitor cells or myocytes comprising culturing heart tissue cells with an amount of an FGF homolog polypeptide sufficient to produce an increase in the number of myocyte progenitor cells or myocytes in the heart tissue cells cultured in the presence of an FGF homolog polypeptide, as compared to heart tissue myocyte progenitor cells or myocytes cultured in the absence of an FGF homolog polypeptide.

19. The method of claim 18, wherein the myocytes or myocyte progenitors are cardiac myocytes or cardiac myocytes progenitors.

20. A method of delivering an agent or drug selectively to heart tissue comprising:

linking a first molecule comprising an FGF homolog polypeptide with a second molecule comprising an agent or drug to form a chimera; and

administering the chimera to heart tissue.

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